Example ATV Certification Application

EPA Workshop March 9, 2005

Example presented by Polaris Industries Inc.

Presenters: Larry Keller & Alex Kennedy

Example ATV Certification Application

Elements of a complete application:

- Model Year Letter of Intent
- Engine Family Application Letter
- Certification Summary Information (CSI)
- Nonroad Fee Filing Form
- Self Checklist (to be developed in near future by EPA)
- Samples of Vehicle Emissions Control Information (VECI) labels and hangtags
- ABT-related information including PLT
- MY06 only: any phase-in calculations

Example ATV Certification Application Model Year Letter of Intent

Purpose:

1. outline model year plan and schedule
2. convey information common to all engine family applications (e.g., VIN coding system, engine family naming convention)

Benefits to OEM:

1. forces model year planning
2. simplifies individual applications
3. expedites approvals

* The letter of intent is the preferred method to convey common information. Small manufacturers with one or two families may find it more convenient to include this information in individual application.

Example ATV Certification Application Model Year Letter of Intent

Suggested Content:

- Company letter head
- Company contact information
- VIN, model number, and engine family naming conventions (coding system)
- Application and desired certificate schedule
- Warranty statements
- Assembly and Testing Facilities description
- Procedures description
- Sample VECI label and hangtag content and format
- Requests for approval prior to applications
- Other pertinent general information
- Authorized company representative signature

Example ATV Certification Application

Polaris example: 6POLX.6834CA

- MY2006 Polaris engine family containing ATV's having 0.683L displacement, 4-stroke, carbureted engines.

Example ATV Certification Application Engine Family Application Letter

Elements of application letter:

- Company letter head
- Request certification of engine family and communicate desired time frame
- Relay engine family detail not included in letter of intent
- Update any family specific information from letter of intent
- Include required compliance statements
- Explanation of engine configuration coding
- Reference all elements of complete application (i.e. any approvals from ARB/EPA)
- Authorized company representative signature

** This type of letter is a required supplement to the CSI.

Example ATV Certification Application Certification Summary Information

Conveys:

1. Engine family parameters
2. Certification levels
3. Test data
4. Models covered

Example ATV Certification Application Certification Summary Information

CSI.1 General Information (Model Year: 2006)

US Manufacturer/ US Importer: Polaris Industries Inc.		Parent Company Name, if applicable:	Small MFR Recognition:
		CARB MFR Code, if any:	CARB: ☐ SVM
Engine Family Name: 6POLX.6834CA	ABT Engine Family: ☐ EPA Only ☐ CARB Only ☐ Both	Application Type: ☐ New ☐ Correction ☐ Running Change ☒ Carry Over, from EF: 5POLX.6834CA	EPA: ☐ SVM ☐ USVM Certify by Design: ☐ Yes ☐ No
Evaporative/ Permeation Family Name (s):		Sales Areas (of all vehicles in the engine family): ☒ 50 States ☐ 49 States ☐ California Only ☐ 49 States + California ☐ 50 States + California ☐ 50 States + 49 States ☐ 50 States + 49 States + California	If your are not the OEM of the vehicle or engine to be certified, please indicate: Name of Vehicle OEM: Polaris Country: USA Name of Engine OEM: Polaris Country: USA
Vehicle/Engine Category: ☐ HMC ☐ OFMC ☒ ATV.A ☐ ATV.B ☐ UTV ☐ ENG ☐ CARB.NC			

Applicant Comments: Engine-based certification per 40 CFR 1051.145, direct to standard – no ABT/FEL. Data carryover from CARB MY05 certification (5POLX.6834CA). Carry-over data not used to generate ABT credits.

CSI.2: EPA/CARB Emission Standards and Certification Levels (CARB HMC Early Compliance Multiplier:)

	EPA Exhaust Emissions (units: ☐ g/km; ☒ g/kw-hr)				CARB Exhaust Emissions (units: ☐ g/km; ☒ g/bhp-hr)				Permeation HC Emissions (Unit: (g/m^2/day) (EPA only)		Vehicle Evaporative Emissions (Unit: g/test) (HMC CARB-only)
Air Pollutant	HC	NOx	HC+NOx	CO	HC	NOx	HC+NOx	CO	Fuel Tank	Fuel Hoses	Diurnal + Hot Soak
Certification Level			8.2	248			6.1	185			
Emission Standard			13.4	400			10.0	300			
Family Emission Limit											

Example ATV Certification Application Certification Summary Information

CSI.3 Engine Family Description

Fuel System (see CSI.4) carburetor	Number of Cylinders: 2 Valves per Cylinder: 2 Fuel Type: ☒ Gasoline ☐ LPG ☐ NG ☐ Other:
Engine Type: ☒ Reciprocating ☐ Rotary ☐ Turbine ☐ Other:	Engine Cooling Media: ☐ Air ☒ Liquid ☐ Other:
Combustion Cycle: ☒ 4-Stroke ☐ 2-Stroke ☐ Other:	Exhaust Useful Life (years): 5 Exhaust Useful Life (hours): 1,000 Exhaust Useful Life (distance): 10,000 Unit: ☒ km ☐ mile
Cylinder Arrangement: ☒ Inline ☐ Vee ☐ Flat ☐ Other:	
New Technology: ☒ No ☐ Yes, technology explanation:	

CSI.4: Exhaust Emission Control Information (use SAE J1930 technology abbreviations)

Catalytic Converter: ☒ No ☐ Yes:	Number of catalytic converter (s):		
	Catalyst Configuration:	☐ Parallel (P) ☐ Series (S)	☐ P+S
	Catalyst Type:	☐ Oxidation (OC) ☐ Three-way (TWC)	☐ OC+TWC
Exhaust Gas Recirculation (EGR): ☒ No ☐ Yes: EGR Type:			
Electronic Controls: ☐ ECM ☐ ICM ☐ Other:			
Feedback Sensor: ☒ No ☐ Yes:	Number of oxygen sensor (s):		
	Sensor Configuration:	☐ Parallel (P) ☐ Series (S)	☐ P+S
	Sensor Type:	☐ O2S ☐ HO2s	☐ AFS
Air Injection: ☐ PAIR ☐ AIR ☐ Other:			
Fuel System: ☐ TBI ☐ MFI ☐ SFI ☐ DGI ☐ Other:			
☒ Carburetor ☐ Gaseous Carburetor ☒ Carburetor: Number of Carburetors: 1 Barrels per Carburetor: 1			
Method of Air Aspiration: ☒ Natural ☐ SC ☐ TC ☐ SAA ☐ TAA ☐ SAW ☐ TAW ☐ Other			

Example ATV Certification Application Certification Summary Information

CSI.5: Exhaust Emission Data Vehicle/Engine and Test Data

EDV ID (or VIN): **EDV Type:** ☐ New ☒ Carryover, from EF: 5POLX.6834CA **Model Name:** EH0680LE018	**Displacement (cc): 683**	**N/V Ratio:**	**EIM (kg):**
	Rated Power @ rpm: **32 kW @ 6000**	**Configuration: 001**	**Tire Pressure:**
	Transmission: CVT	**Curb Mass:**	**Road Load Horsepower:**
Assigned DF: ☒ N/A ☐ EPA SVM ☐ ARB SVM ☐ 50-State SVM		**Test Procedure:** ☐ Chassis ☒ Engine (J1088) ☐ Other:	

Test Date (MM/DD/YY)	Test Number	Test By "E"-EPA "A"-ARB "M"-MFR	Test for "C"-Cert "R"-RC "O"-Other	Test Fuel "I"-Indolene, "P"-CA Phase 2	Tested at ☒ km ☐ hr	Raw Emission Test Results (Note: Unit should be the same as the emission standards for the EF)				
						HC	NOx	HC + NOx	CO	CO_2
3/6/03	1	M	O	I	0	3.2	3.3	6.5	127.5	
3/17/03	2	M	O	I	2500	2.4	3.7	6.1	113.3	
3/26/03	3	M	O	I	5000	3.5	3.5	7.0	108.0	
4/8/03	4	M	O	I	7500	2.4	3.8	6.2	102.3	
4/17/03	5	M	O	I	10000	2.4	4.4	6.8	94.0	
6/19/03	1	M	C	I	0	2.3	3.3	5.6	185.1	
For EPA Certification (50 States and 49 State)		**EPA Deterioration Factor (☐ Additive ☒ Multiplicative)**						1.049	1.00	
					EPA Certification level			8.2	248	
For ARB Certification (50 State or CA only)					**CARB Deterioration Factor (Multiplicative Only)**			1.049	1.00	
					CARB Certification level			6.1	185	

DDV Information, if different that EDV: DDV SN 00012, EDV SN 00025. DDV and EDV from same tooling. EDV is final calibration.

Manufacturer Comments: Pollutants measurements displayed in g/hp-hr, except for EPA certification levels, which are shown in g/kW-hr. Engine-based testing equivalency to useful life in kilometers defined by CARB-approved DF test procedure; reference CRC-2002-002.

Example ATV Certification Application Certification Summary Information

CSI.6A: Permeation Emissions Control/Test Data (Optional until 2008 MY)

Certify by Emission Testing						
Equipment	**Material**	**Thickness (mm)**	**Total Inside Area (m^2)**	**Test Data (g/m^2/day)** ☐ Evap/Perm Test ☐ Carryover, from: MY: EF:	**DF (g/m^2/day)** ☐ New ☐ EPA DF for SVM ☐ Carryover, from: MY: EF:	**Certification Level (g/m^2/day)**
Fuel Tank						
Fuel line						

Certify-by-Design	
Fuel Tank	Fuel tank permeability control technology applied is 40 CFR §1051.245, Table 1, control technology ☐ (i) ☐ (ii) ☐ Other:
Fuel line	Fuel lines permeability control technology applied is 40 CFR §1051.245, Table 2, control technology: ☐ (i) ☐ (ii) ☐ Other:
Manufacturer Comments:	

CSI.6B: Evaporative Emissions Control/Test Data (Highway Motorcycle – CARB-only)

Vehicle Evaporative Emissions Information										
Evaporative Emission Test Vehicle Information				Evaporative Testing Result (raw data : g/test)			Evaporative Deterioration Factors (Additive Factors)			Certification LEVEL (g/test) ={(Diurnal+Hot Soak) + Overall DF}
Evaporative Family	Test Vehicle ID Number	Test Date	Test Type*	Diurnal	Hot Soak	Diurnal + Hot Soak	Vehicle DF	Bench DF	Overall DF : (vehicle + bench)/2	
Manufacturer Notes:										

* Test Type: evaporative emission data vehicle (EDV), or vehicle DF emission data vehicle (VDV) or bench emission DF data vehicle (BDF)

Example ATV Certification Application Certification Summary Information

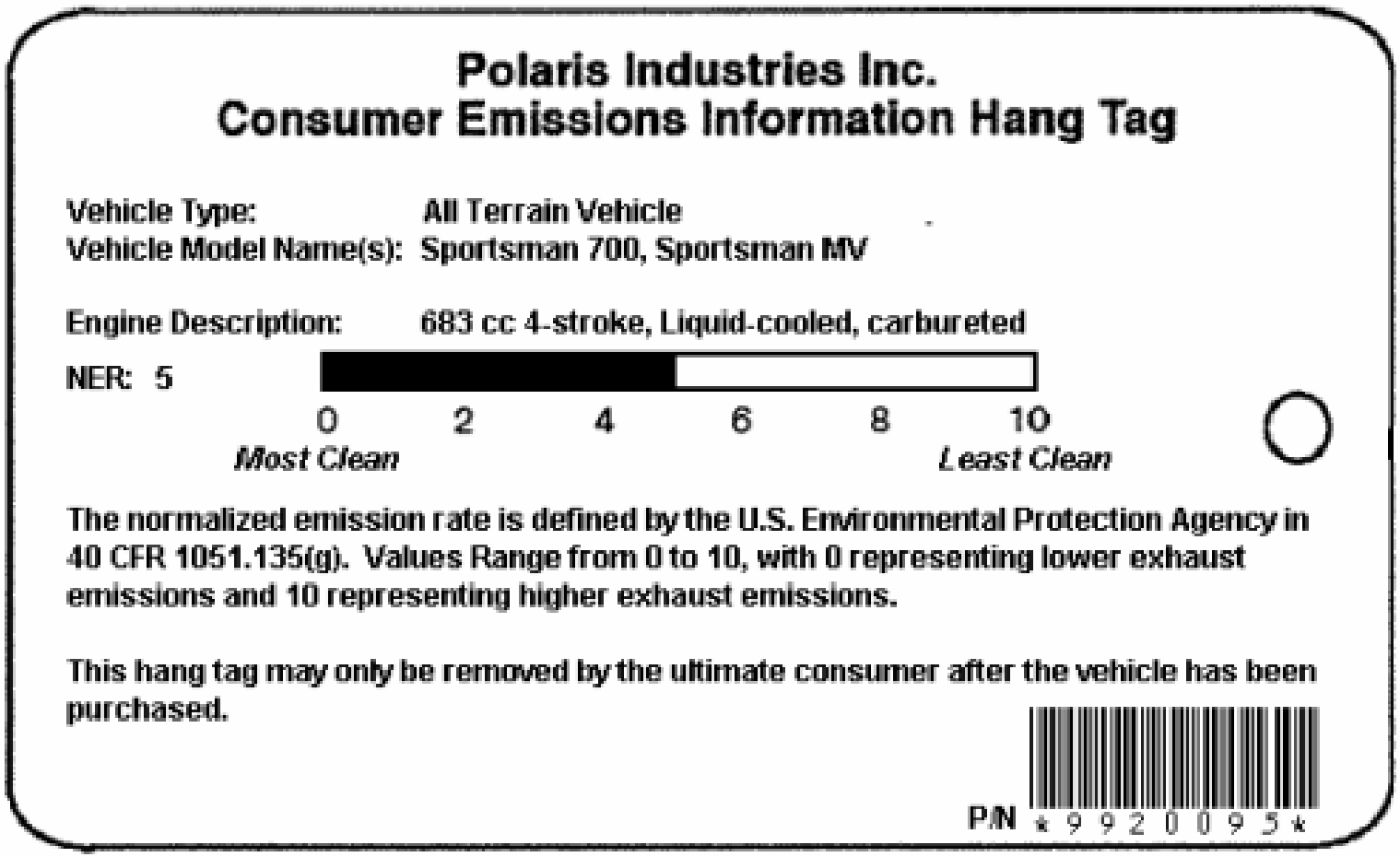
CSI.7: Models Covered

	Vehicle/Engine Models Covered					
Make (Marketing Division)	Polaris	Polaris				
Model Name	Sportsman 700	Sportsman MV				
Engine Code	EH0680LE018	EH0680LE017				
Vehicle Category	ATV	ATV				
Bore (mm)	80	80				
Displacement ☐ **Liter** ☒ **cm^3**	683	683				
Rated Power (kW)	32	32				
RPM @ Rated Power	6000	6000				
Rated Torque (nt-m)	54	54				
RPM @ Rated Torque	5000	5000				
Un-governed Rated Speed (rpm)	6000	6000				
Curb Mass (kg)	347	450				
Transmission (M5, A3, etc.)	AV	AV				
Label Type[1]	2	2				
Emission Control System (model / rating specific)	EM	EM				
Projected Sales (CBI) – CA Only	200	100				
Projected Sales (CBI) – US Total (Includes CA Sales)	20,000	10,000				

Example ATV Certification Application Certification Summary Information

CARB ONLY:	California ATV Specification (Category ATV.A) (Use Yes or No to answer.)					
Vehicle Characteristics	Sportsman 700	Sportsman MV				
50 " or Less in Width?	Yes	Yes				
4 Low Pressure Tires?	Yes	Yes				
Seat Straddled by Operator?	Yes	Yes				
Without Passenger Seating?	Yes	Yes				
Handlebar?	Yes	Yes				
Max Payload 350 lbs?	Yes	No				
(CARB Staff Only)						
California ATV? (Y / N)						
Staff Notes						

Example ATV Certification Application US EPA Air Index Consumer Hangtag



Polaris Industries Inc.
Consumer Emissions Information Hang Tag

Vehicle Type: All Terrain Vehicle
Vehicle Model Name(s): Sportsman 700, Sportsman MV

Engine Description: 683 cc 4-stroke, Liquid-cooled, carbureted

NER: 5

0 2 4 6 8 10

Most Clean *Least Clean*

The normalized emission rate is defined by the U.S. Environmental Protection Agency in 40 CFR 1051.135(g). Values Range from 0 to 10, with 0 representing lower exhaust emissions and 10 representing higher exhaust emissions.

This hang tag may only be removed by the ultimate consumer after the vehicle has been purchased.

P/N *9920095*

Example ATV Certification Application Vehicle Emission Control Information

Label located on vehicle per 40 CFR 1051.135

Example for EPA & CARB compliant 6POLX.6834CA

POLARIS INDUSTRIES INC.

EMISSION CONTROL INFORMATION
6POLX.6834CA

EM

U.S. EPA IMPORT
FORM 3520-21
rev 2-01 CODE 16

THIS VEHICLE MEETS U.S. EPA REGULATIONS FOR 2006 ATV'S OR OFFROAD UTILITY VEHICLES AND IS CERTIFIED FOR SALE IN CALIFORNIA AND ALL 50 STATES.

APPLICABLE EMISSIONS LIMITS: HC+NOX 13.4 G/KW-HR; CO 400 G/KW-HR

THIS VEHICLE IS CERTIFIED TO OPERATE ON GASOLINE. RECOMMENDED FUEL: UNLEADED GASOLINE, MINIMUM OF 87-OCTANE (R+M)/2.

OIL: POLARIS 0W-40 **SPARK PLUG & GAP:** Champion RC748YC; 0.35" (0.9mm) **IDLE SPEED:** 1200 ± 100 RPM

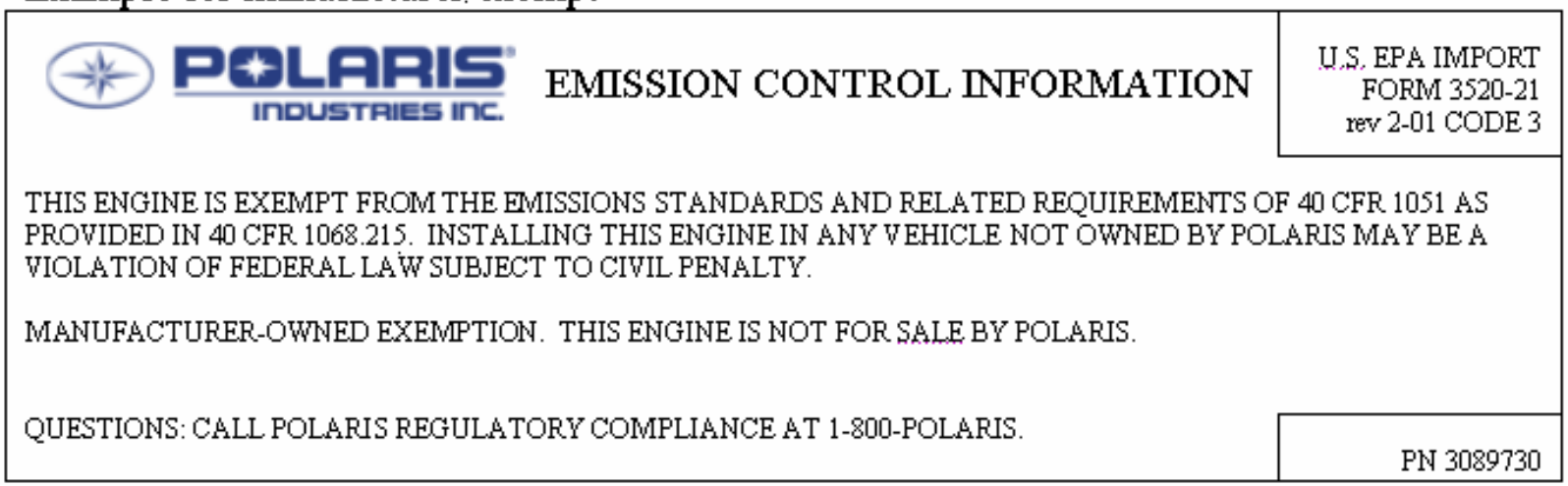
NO ADJUSTMENTS NECESSARY. SEE OWNER'S MANUAL FOR MAINTENANCE DETAILS.

PN 7173575

Example ATV Certification Application Vehicle Emission Control Information

Label located on vehicle per 40 CFR 1051.135

Example for manufacturer exempt



POLARIS INDUSTRIES INC.

EMISSION CONTROL INFORMATION

U.S. EPA IMPORT
FORM 3520-21
rev 2-01 CODE 3

THIS ENGINE IS EXEMPT FROM THE EMISSIONS STANDARDS AND RELATED REQUIREMENTS OF 40 CFR 1051 AS PROVIDED IN 40 CFR 1068.215. INSTALLING THIS ENGINE IN ANY VEHICLE NOT OWNED BY POLARIS MAY BE A VIOLATION OF FEDERAL LAW SUBJECT TO CIVIL PENALTY.

MANUFACTURER-OWNED EXEMPTION. THIS ENGINE IS NOT FOR SALE BY POLARIS.

QUESTIONS: CALL POLARIS REGULATORY COMPLIANCE AT 1-800-POLARIS.

PN 3089730

Example ATV Certification Application Off-road fee filing form

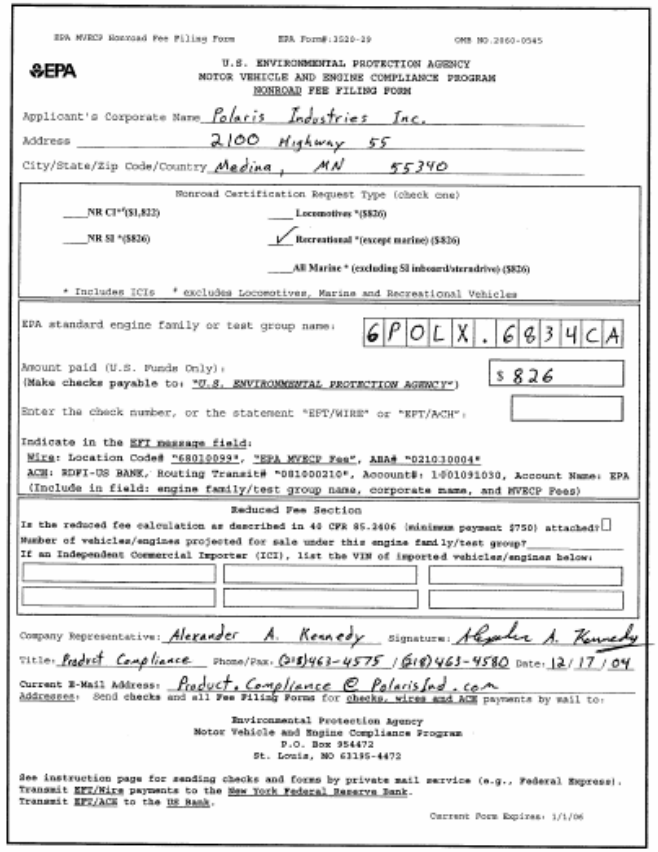
Can be downloaded from EPA website:

http://www.epa.gov/otaq/nr2feeform.pdf

Send form and payment to bank indicated on form.

Send copy of form to certification officer as part of engine family application package.

$826 per engine family



EPA MVECP Nonroad Fee Filing Form EPA Form#: 3520-29 OMB NO: 2060-0545

EPA

U.S. ENVIRONMENTAL PROTECTION AGENCY
MOTOR VEHICLE AND ENGINE COMPLIANCE PROGRAM
NONROAD FEE FILING FORM

Applicant's Corporate Name: Polaris Industries Inc.
Address: 2100 Highway 55
City/State/Zip Code/Country: Medina, MN 55340

Nonroad Certification Request Type (check one)

___ NR CI* ($1,822)
___ NR SI *($826)
___ Locomotives *($826)
✓ Recreational *(except marine) ($826)
___ All Marine * (excluding SI inboard/sterndrive) ($826)

* Includes ICIs * excludes Locomotives, Marine and Recreational Vehicles

EPA standard engine family or test group name: 6POLX.6634CA

Amount paid (U.S. Funds Only): $826
(Make checks payable to: "U.S. ENVIRONMENTAL PROTECTION AGENCY")

Enter the check number, or the statement "EFT/WIRE" or "EFT/ACH":

Indicate in the EFT message field:
Wire: Location Code# "68010099", "EPA MVECP Fee", ABA# "021030004"
ACH: EDFI-US BANK, Routing Transit# "081000210", Account#: 1-801091030, Account Name: EPA
(Include in field: engine family/test group name, corporate name, and MVECP Fees)

Reduced Fee Section
Is the reduced fee calculation as described in 40 CFR 85.2406 (minimum payment $750) attached? ☐
Number of vehicles/engines projected for sale under this engine family/test group?
If an Independent Commercial Importer (ICI), list the VIN of imported vehicles/engines below:

Company Representative: Alexander A. Kennedy Signature: Alexander A. Kennedy
Title: Product Compliance Phone/Fax: (218)463-4575 / (218)463-4580 Date: 12/17/04
Current E-Mail Address: Product.Compliance@PolarisInd.com
Addressee: Send checks and all Fee Filing Forms for checks, wires and ACH payments by mail to:

Environmental Protection Agency
Motor Vehicle and Engine Compliance Program
P.O. Box 954472
St. Louis, MO 63195-4472

See instruction page for sending checks and forms by private mail service (e.g., Federal Express).
Transmit EFT/Wire payments to the New York Federal Reserve Bank.
Transmit EFT/ACH to the US Bank.

Current Form Expires: 1/1/06

Example ATV Certification Application Self Checklist

Future form. Not finalized at this point.

Obtain from certification officer.

Send to certification officer as part of engine family application package.

Special Topic 1: ATV Engine Import

- Many ATV's use imported engines from non-US suppliers
- Multiple hardware configurations and import situations exist
- The attached chart shows examples of how the revised Form 3520-21 can be completed for some common situations
- The Description & Declaration section may require attached listings in some cases

EPA Form 3520-21 Examples for ATV

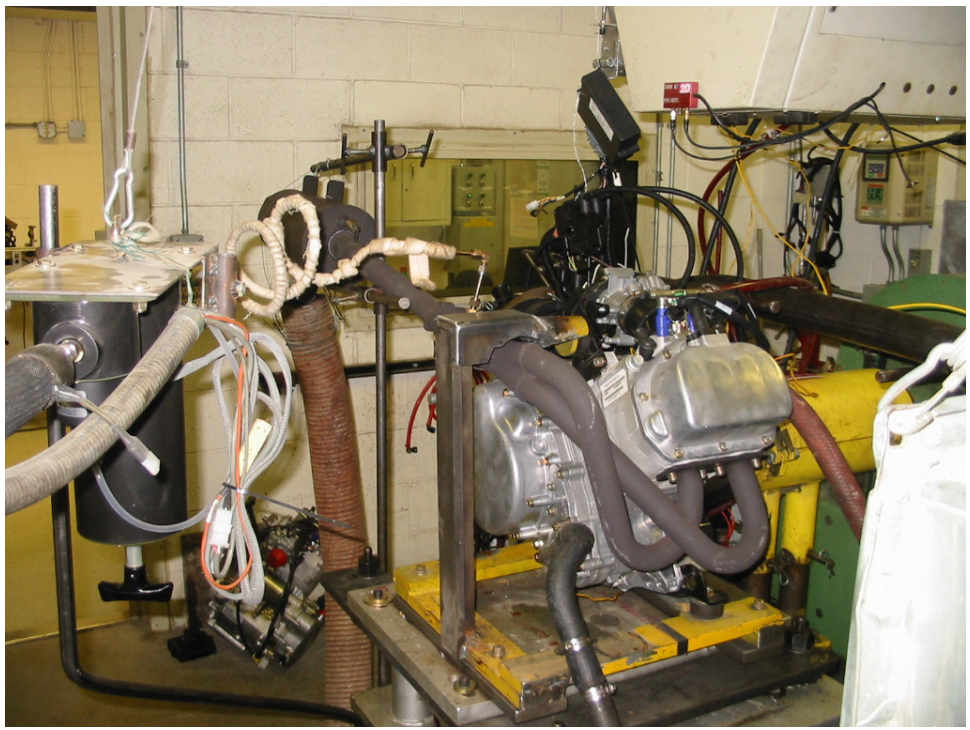
Imported Item	**As-Imported Assembly Description**	**To Be Installed by ATV Manufacturer**	**Form 3520-21 Engine / Vehicle / Equipment Type**	**Form 3520-21 Import Code**
ATV Engine Assembly "A" *Certified Vehicle Configuration*	Engine Block Cylinder Heads Crankcase & Pistons Fuel System (Carburetor) Vehicle ECI Label *[optional]*	Air Box Exhaust System ATV Chassis	Box F. Recreational spark ignition vehicles or engines	Box16. Incomplete Engines
ATV Engine Assembly "A" *Prototype Configuration*	Engine Block Cylinder Heads Crankcase & Pistons Fuel System (Carburetor) Exempt Engine Label *[optional]*	Air Box Exhaust System ATV Chassis	Box F. Recreational spark ignition vehicles or engines	Box 3. Manufacturer-Owned Engine
ATV Engine Assembly "B" *Certified Vehicle Configuration*	Engine Block Cylinder Heads Crankcase & Pistons Fuel Injectors w/o EMM Vehicle ECI Label *[optional]*	Air Box Exhaust System Engine Mgmt Module ATV Chassis	Box F. Recreational spark ignition vehicles or engines	Box16. Incomplete Engines
ATV Vehicle *Certified Vehicle Configuration*	Complete ATV Vehicle ECI Label *[optional]*	N/A	Box F. Recreational spark ignition vehicles or engines	Box 1. U.S. Certified Engine or Engine Installed in a Certified Vehicle
ATV Vehicle *Prototype Vehicle Configuration*	Complete ATV Exempt Engine Label *[optional]*	N/A	Box F. Recreational spark ignition vehicles or engines	Box 3. Manufacturer-Owned Engine

Import form can be found at http://www.epa.gov/otaq/imports/

Special Topic 2: ATV Engine Testing

- Emission testing for the example US engine family conducted at the Polaris facility in Roseau, MN
- Engine-based testing using the J-1088 raw gas testing option that is allowed through model year 2008
  - engine dynamometer (i.e. Schenck W130 water cooled eddy current dyno)
  - Raw gas heated sample emissions bench (i.e. Pierburg AMA 4000)
- Carry-over of certification and DF data from previous CARB executive order
  - Certification engine tested after stabilization
  - Service accumulation to 10,000 km vehicle-equivalent distance using an aggressive engine test cycle
  - DF calculated using least squares fit of stabilized, intermediate, and end of useful life data (at least 3 equally spaced points per CARB)
- Test fuels
  - Locally available gasoline used for service accumulation
  - Indolene Clear (EEE) used for emissions testing

ATV Test Engine on Polaris Dyno



ATV Engine on Dynamometer

Operator Work Station

Emissions Bench

ATV-Specific Engine Test Development

- EPA and MIC have an MOU re: development of an engine-based test cycle to replace the J-1088 option
- SWRI has been contracted to conduct the associated field and engine testing
- Field testing of instrumented vehicles is complete
- Engine testing phase is nearing completion
- MIC will be propose an engine-based, ATV-specific test cycle for review by the EPA
- Ultimately the new engine-based test and g/kW-hr emission limits functionally equivalent to the FTP chassis dyno limits will be adopted by the EPA as a certification option
- The FTP-75 Chassis dyno limits (g/km) will remain as the base standards in the rule

Questions and Answers

- Q1 – How will EPA reconcile the differences in DF direction between CARB and EPA ?
- A1 – EPA has no plan to change DF definition as it is written in 40CFR§1051. However, the technical amendment to be published in a near future will clarify further on how to calculate and apply a DF for a regulated pollutant to demonstrate compliance.
- Q2 – Please explain the 50-state, 49-state, CA designations in the General Information Section of the application
- A2 – A 50-state designation indicates that the vehicle has been certified to meet both EPA and California regulations and can be sold in all 50 states; it bears a 50-state label with wordings to the effect that it meets both EPA and California regulations. A 49-state designation indicates that the vehicle has been certified to meet EPA regulations and can be sold only in federal sales area (currently 49 states); its label wordings do not make reference to compliance with California regulations. A California designation indicates that the vehicle has been certified to meet California regulations and can be sold in California and those states which have adopted California requirements for motorcycles or ATVs (currently none have adopted California requirements for motorcycles and ATVs); its label does not make reference to compliance with EPA regulations, and when it does, the reference is for compliance with EPA regulations as applied to California, for example, a California-designation off-road motorcycle that does not meet EPA's permeation requirement.

  For the General Information Section, the question is about ALL available label types that are used for the vehicles in an engine family. If vehicles in an engine family have only the 50-state label, the 50-state box should be marked. If vehicles in an engine family have either a 50-state and 49-state label, then the 50-state + 49-state box should be marked. If vehicles in an engine family have either a 50-state, 49-state, or California label, then the 50-state + 49-state + California box should be marked.

Questions and Answers

- Q3 – Is curb mass, EIM, tire pressure, NV ratio, road load horsepower necessary on the CSI for engine-based certification?
- A3 – You may leave these fields blank if you use engine based tests to show compliance.
- Q4 – What is EPA's policy on carryover of California certified families ?
- A4 – Before 2009 MY, EPA in general will not require any new emissions data if you carryover California certified emissions data to show compliance with the optional (engine-based) emission standards set forth in §1051.145 (b).

  A new section §1051.145 (b)(5) will be added to the Technical Amendment to be published soon that provides "*For engines certified under this paragraph (b) without generating or using emission credits under subpart H of this part, you may determine deterioration factors based on emission measurements using good engineering judgment, instead of following the provisions of §1051.243.*" This paragraph will be limited to 2006 to 2008 model year engine families.
- Q5 – what entails an "incomplete" engine versus a "complete" engine for the purpose of the engine importation form?

  A5 – For ATV certification which is a vehicle-based certification, if the engine is not installed in a vehicle representing its certified form, it is an "incomplete" engine for the purpose of the importation form.

Questions and Answers

- Q6 – What is the meaning of the term “new technology” on CSI.3 ?
- A6 – *New technology* refers to an advanced technology that is the first time applied to your certifying vehicles or engines and that has potential impact to emissions, even if the same technology may have been used by other manufacturers.
- Q7 – Where is the term “rated power” as used in CSI.5 and CSI.7 defined in the regulation ?
- A7 – *Rated power* means the *maximum engine power* as defined in 40 CFR 90.3
- Q8 – What is the difference between DDV and EDV on CSI.5 ?
- A8 – A *DDV (durability data vehicle)* is a vehicle or engine that is tested to establish deterioration factors (DFs). An *EDV (emission data vehicle)* is a vehicle or engine that is tested to show compliance with applicable emission standards for certification purpose. Under the requirements for highway motorcycles, off-highway motorcycles and ATVs, manufacturers are allowed to perform emissions tests on the same vehicle to generate DFs and demonstrate emissions compliance; therefore, In this case, an EDV may include or equal to a DDV. (Ref: 40CFR§1051.801)
- Q9 - What does the term “configuration” mean in CSI.5 ?
- A9 - *Configuration* means a unique combination of vehicle (or engine) hardware and calibration within an engine family. Engines within a single vehicle (or engine) configuration differ only with respect to normal production variability. (Ref: 40CFR§1051.801: Engine configuration)